

Description

Title of Invention: HAIR TREATMENT COMPOSITION

Technical Field

[0001]

The present invention relates to a hair treatment composition.

Background Art

[0002]

The color of hair is formed with melanin pigments. The melanin is classified into two types, i.e., eumelanin which imparts a range of brown to black colors, and pheomelanin which imparts a range of yellow to red colors. The color of hair is determined by the ratio in the presence of eumelanin and pheomelanin. For example, in the case where the hair contains a large amount of eumelanin and a small amount of pheomelanin, it has a black color. In the case where the hair contains a small amount of eumelanin and a large amount of pheomelanin, it has a gold or reddish color. A reduction or elimination in melanin pigments contained in the hair results in white hair or gray hair (for example, see Patent Literatures 1 to 3).

[0003]

The bulge region of the hair follicle includes melanocyte stem cells. The melanocyte stem cells generate pigment cells (melanocytes). The pigment cells generate melanin pigments, and feed the melanin pigments to hair matrix cells (keratinocytes). The hair matrix cells to which the melanin pigments are fed are divided, and grow as hair. It is believed that the amount of the melanocyte stem cells and its activity are reduced due to aging. It is believed that such a reduction in amount and activity of the melanocyte stem cells causes white hair or gray hair.

Citation List

Patent Literature

[0004]

Patent Literature 1: Japanese Patent No. 3289975

Patent Literature 2: Japanese Patent No. 4971072

Patent Literature 3: Japanese Patent No. 5850266

Summary of Invention

Technical Problem

[0005]

An object of the present invention is to provide a hair treatment composition which can efficiently increase melanin pigments of hair.

Solution to Problem

[0006]

An aspect according to the present invention provides a hair treatment composition comprising 0.0005 wt% or more of a melanin synthesis-promoting peptide, 0.00069 wt% or more of a hair-regenerative peptide, 0.00001 wt% or more of an anti-aging peptide, 0.01525 wt% or more of a stem cell lysate, and 0.00563 wt% or more of an anti-inflammatory plant extract.

[0007]

In the hair treatment composition above, the melanin synthesis-promoting peptide may be palmitoyl tetrapeptide-20 or palmitoyl tetrapeptide-20 amide.

[0008]

In the hair treatment composition above, the palmitoyl tetrapeptide-20 amide may be contained in Greyverse (registered trademark).

[0009]

In the hair treatment composition above, the hair-regenerative peptide may be acetyl tetrapeptide-3.

[0010]

In the hair treatment composition above, the hair-regenerative peptide may be contained in Capixyl (registered trademark).

[0011]

In the hair treatment composition above, the anti-aging peptide may be trifluoroacetyl tripeptide-2.

[0012]

In the hair treatment composition above, the anti-aging peptide may be contained in Progerine (registered trademark).

[0013]

In the hair treatment composition above, the stem cell lysate may contain an apple stem cell lysate.

[0014]

In the hair treatment composition above, 0.009 wt% or more of the apple stem cell lysate may be contained.

[0015]

In the hair treatment composition above, the stem cell lysate may contain a bamboo stem cell lysate.

[0016]

In the hair treatment composition above, 0.00625 wt% or more of the bamboo stem cell lysate may be contained.

[0017]

In the hair treatment composition above, the anti-inflammatory plant extract may contain a Chamerion angustifolium extract.

[0018]

In the hair treatment composition above, 0.005 wt% or more of the Chamerion angustifolium extract may be contained.

[0019]

In the hair treatment composition above, the Chamerion angustifolium extract may be contained in Defenscalp (registered trademark).

[0020]

In the hair treatment composition above, the anti-inflammatory plant extract may contain a *Trifolium pratense* flower extract.

[0021]

In the hair treatment composition above, 0.00063 wt% or more of the *Trifolium pratense* flower extract may be contained.

[0022]

In the hair treatment composition above, the *Trifolium pratense* flower extract may be contained in Capixyl (registered trademark).

[0023]

The hair treatment composition may prevent white hair or gray hair.

[0024]

The hair treatment composition may increase hair melanin pigments.

[0025]

The hair treatment composition may be a shampoo.

[0026]

The hair treatment composition may be a beauty essence.

[0027]

An aspect according to the present invention provides a method of preventing white hair or gray hair,

the method comprising applying the hair treatment composition to a scalp.

[0028]

An aspect according to the present invention provides a method of increasing hair melanin pigments, the method comprising applying the hair treatment composition to a scalp.

[0029]

An aspect according to the present invention provides a hair treatment composition comprising 1.0 wt% or more of Greyverse (registered trademark), 2.5 wt% or more of Capixyl (registered trademark), 0.05 wt% or more of Progerine (registered trademark), 0.009 wt% or more of an apple stem cell lysate, 0.00625 wt% or more of a bamboo stem cell lysate, and 0.1 wt% or more of Defenscalp (registered trademark).

[0030]

The hair treatment composition may prevent white hair or gray hair.

[0031]

The hair treatment composition may increase hair melanin pigments.

[0032]

The hair treatment composition may be a shampoo.

[0033]

The hair treatment composition may be a beauty essence.

Advantageous Effect of Invention

[0034]

The present invention can provide a hair treatment composition which can efficiently increase hair melanin pigments.

Brief Description of Drawings

[0035]

[Figure 1] Figure 1 is a graph showing the transition of the proportion of a degree of amelioration in the amount of white hair evaluated by a doctor and a hair adviser according to Example.

[Figure 2] Figure 2 is a table showing the transition of the proportion of a degree of amelioration in the amount of white hair evaluated by the doctor and the hair adviser according to Example.

[Figure 3] Figure 3 is a graph showing the transition of the proportion of a degree of amelioration in the color of white hair evaluated by the doctor and the hair adviser according to Example.

[Figure 4] Figure 4 is a table showing the transition of the proportion of a degree of amelioration in the color of white hair evaluated by the doctor and the hair adviser according to Example.

[Figure 5] Figure 5 is a graph showing the transition of the proportion of a degree of amelioration in the

proximal ends of white hair evaluated by the doctor and the hair adviser according to Example.

[Figure 6] Figure 6 is a table showing the transition of the proportion of a degree of amelioration in the proximal ends of white hair evaluated by the doctor and the hair adviser according to Example.

[Figure 7] Figure 7 is a graph and a table showing the transition of a degree of bother about white hair based on questionnaires answered by subjects according to Example.

[Figure 8] Figure 8 is a graph and a table showing the transition of a VAS change rate of a degree of bother about white hair based on the questionnaires answered by the subjects according to Example.

[Figure 9] Figure 9 is a graph and a table showing the transition of the amount of white hair based on the questionnaires answered by the subjects according to Example.

[Figure 10] Figure 10 is a graph and a table showing the transition of the VAS change rate about the amount of white hair based on the questionnaires answered by the subjects according to Example.

[Figure 11] Figure 11 is a graph and a table showing the transition of the color of white hair based on the questionnaires answered by the subjects according to Example.

[Figure 12] Figure 12 is a graph and a table showing the transition of the VAS change rate about the color of white hair based on the questionnaires answered by the subjects according to Example.

[Figure 13] Figure 13 is a graph and a table showing the transition of the range of white hair based on the questionnaires answered by the subjects according to Example.

[Figure 14] Figure 14 is a graph and a table showing the transition of the VAS change rate about the range of white hair based on the questionnaires answered by the subjects according to Example.

[Figure 15] Figure 15 is a graph and a table showing the transition of a degree of visibility of white hair based on the questionnaires answered by the subjects according to Example.

[Figure 16] Figure 16 is a graph and a table showing the transition of the VAS change rate about a degree of visibility of white hair based on the questionnaires answered by the subjects according to Example.

[Figure 17] Figure 17 is a table showing results of diagnosis of the subjects by the doctor and the hair adviser according to Example.

[Figure 18] Figure 18 is a graph showing the transition of the proportion of a degree of amelioration in the amount of white hair evaluated by the doctor and the hair adviser according to Comparative Example.

[Figure 19] Figure 19 is a table showing the transition of the proportion of a degree of amelioration in the amount of white hair evaluated by the doctor and the hair adviser according to Comparative Example.

[Figure 20] Figure 20 is a graph showing the transition of the proportion of a degree of amelioration in the color of white hair evaluated by the doctor and the hair adviser according to Comparative Example.

[Figure 21] Figure 21 is a table showing the transition of the proportion of a degree of amelioration in the color of white hair evaluated by the doctor and the hair adviser according to Comparative Example.

[Figure 22] Figure 22 is a graph showing the transition of the proportion of a degree of amelioration in the proximal ends of white hair evaluated by the doctor and the hair adviser according to Comparative Example.

[Figure 23] Figure 23 is a table showing the transition of the proportion of a degree of amelioration in the proximal ends of white hair evaluated by the doctor and the hair adviser according to Comparative Example.

Description of Embodiment

[0036]

An embodiment according to the present invention will now be described in detail. The embodiment shown below is only illustrations of an apparatus and method for embodying technical ideas of the present invention,

and it should not be construed that the present invention is limited to the following combination of constituent components and the like by the technical ideas of the present invention. The technical ideas of the present invention can be subjected to a variety of modifications in Claims.

[0037]

A hair treatment composition according to an embodiment comprises 0.0005 wt% or more of a melanin synthesis-promoting peptide, 0.00069 wt% or more of a hair-regenerative peptide, 0.00001 wt% or more of an anti-aging peptide, 0.01525 wt% or more of a stem cell lysate, and 0.00563 wt% or more of an anti-inflammatory plant extract.

[0038]

The concentration of the melanin synthesis-promoting peptide in the hair treatment composition according to the embodiment may be 0.0005 wt% or more, 0.00065 wt% or more, or 0.0008 wt% or more. The concentration of the melanin synthesis-promoting peptide may be 0.0025 wt% or less, 0.002 wt% or less, or 0.0015 wt% or less. The melanin synthesis-promoting peptide promotes the synthesis of melanin pigments. For example, the melanin synthesis-promoting peptide binds to a melanocortin 1 receptor (MC1-R). The melanin synthesis-promoting peptide may also reduce oxidative stress applied to the melanin pigments, which causes white hair or gray hair.

For example, the melanin synthesis-promoting peptide may activate sirtuin (SIRT), which is a longevity protein, and may activate tyrosine kinase-associated protein (TRP)-2, which is an antioxidative enzyme.

[0039]

Examples of the melanin synthesis-promoting peptide include palmitoyl tetrapeptide-20, palmitoyl tetrapeptide-20 amide, and acetyl hexapeptide-1. Palmitoyl tetrapeptide-20 is a reaction product of palmitic acid with a synthetic tetrapeptide composed of arginine, histidine, phenylalanine, and tryptophan. Palmitoyl tetrapeptide-20 is a biomimetic peptide of α -melanocyte-stimulating hormone (MSH). Palmitoyl tetrapeptide-20 amide may be contained in Greyverse (registered trademark, AH & NS).

[0040]

The concentration of Greyverse (registered trademark, AH & NS) in the hair treatment composition according to the embodiment may be 1.0 wt% or more, 1.25 wt% or more, or 1.5 wt% or more. The concentration of Greyverse (registered trademark, AH & NS) may also be 6.0 wt% or less, 5.5 wt% or less, or 5.0 wt% or less.

[0041]

The concentration of the hair-regenerative peptide in the hair treatment composition according to the embodiment may be 0.00069 wt% or more, 0.0009 wt% or more, or 0.0011 wt% or more. The concentration of the hair-

regenerative peptide may also be 0.00345 wt% or less, 0.00276 wt% or less, or 0.00207 wt% or less. The hair-regenerative peptide may be a peptide which protects hair follicles and proximal ends of hair. The hair-regenerative peptide may have an anti-inflammatory action to suppress inflammation which causes white hair or gray hair. The hair-regenerative peptide may be a peptide which suppresses 5 α -reductase and androgen.

[0042]

Examples of the hair-regenerative peptide include acetyl tetrapeptide-3 and tripeptide-1 copper. Acetyl tetrapeptide-3 is produced by acetylation of lysine, glycine, histidine, and a synthetic tetrapeptide containing lysine. Acetyl tetrapeptide-3 may be contained in Capixyl (registered trademark, AH & NS).

[0043]

The concentration of Capixyl (registered trademark, AH & NS) in the hair treatment composition according to the embodiment may be 2.5 wt% or more, 3.125 wt% or more, or 3.75 wt% or more. The concentration of Capixyl (registered trademark, AH & NS) may also be 15.0 wt% or less, 13.75 wt% or less, or 12.5 wt% or less.

[0044]

The concentration of the anti-aging peptide in the hair treatment composition according to the embodiment may be 0.00001 wt% or more, 0.00001 wt% or more, or 0.00002 wt% or more. The concentration of the anti-aging

peptide may be 0.00005 wt% or less, 0.00004 wt% or less, or 0.00003 wt% or less. The anti-aging peptide enhances resistance against stress hormones in hair follicle cells and dermal papilla cells, for example. The anti-aging peptide may also have a function to suppress inflammation which causes white hair or gray hair. The presence of the hair-regenerative peptide and the anti-aging peptide is likely to suppress neutrophil elastase and protect hair follicles against stress hormones.

[0045]

Examples of the anti-aging peptide include trifluoroacetyl tripeptide-2. Trifluoroacetyl tripeptide-2 is produced from valine, tripeptide-2 containing tyrosine and valine, and trifluoroacetic acid. Trifluoroacetyl tripeptide-2 may be contained in Progerine (registered trademark, AH & NS).

[0046]

The concentration of Progerine (registered trademark, AH & NS) in the hair treatment composition according to the embodiment may be 0.05 wt% or more, 0.0625 wt% or more, or 0.075 wt% or more. The concentration of Progerine (registered trademark, AH & NS) may also be 0.3 wt% or less, 0.275 wt% or less, or 0.25 wt% or less.

[0047]

The concentration of the stem cell lysate in the hair treatment composition according to the embodiment may be 0.01525 wt% or more, 0.01976 wt% or more, or

0.02432 wt% or more. The concentration of the stem cell lysate may also be 0.076 wt% or less, 0.061 wt% or less, or 0.0456 wt% or less. The stem cell lysate may be a stem cell extract. The stem cell lysate contains at least a lysate of cytoplasm components of the stem cell. In addition to the lysate of the cytoplasm components of the stem cell, the stem cell lysate may contain a lysate of cell wall components of the stem cell.

[0048]

The stem cell lysate may contain an apple stem cell lysate. The apple stem cell lysate may be an apple stem cell extract. The apple stem cell has an effect of maintaining melanin pigments in hair roots. The apple stem cell lysate contains at least a lysate of cytoplasm components of the apple stem cell. In addition to the lysate of the cytoplasm components of the apple stem cell, the apple stem cell lysate may contain a lysate of cell wall components of the apple stem cell. For example, the apple stem cell lysate protects scalps and hair follicles, and activates bulge stem cells. The presence of the hair-regenerative peptide and the apple stem cell lysate is likely to enhance the action to protect the hair root and the action to promote production of collagen 17. The apple stem cell lysate can be produced by any method, and for example, the apple stem cell lysate may be prepared by adding a high pressure to apple stem cells. The apple

stem cell lysate may be contained in a solvent containing lecithin, glycerin, xanthan gum, and phenoxyethanol.

[0049]

The concentration of the apple stem cell lysate in the hair treatment composition according to the embodiment may be 0.009 wt% or more, 0.0117 wt% or more, or 0.0144 wt% or more. The concentration of the apple stem cell lysate may be 0.045 wt% or less, 0.036 wt% or less, or 0.027 wt% or less. As the apple stem cell lysate, PhytoCellTec Malus Domestica (registered trademark, AH & NS) can be used, for example.

[0050]

The stem cell lysate may contain a bamboo stem cell lysate. The bamboo stem cell lysate may be a bamboo stem cell extract. The bamboo stem cell to be used can be a growth point stem cell of *Phyllostachys edulis*. The bamboo stem cell lysate contains at least a lysate of cytoplasm components of the bamboo stem cells. In addition to the lysate of the cytoplasm components of the bamboo stem cell, the bamboo stem cell lysate may contain a lysate of cell wall components of the bamboo stem cell. The bamboo stem cell lysate can be produced by any method, and for example, a water-soluble product of cytoplasm of the bamboo stem cell may be extracted.

[0051]

The concentration of the bamboo stem cell lysate in the hair treatment composition according to the

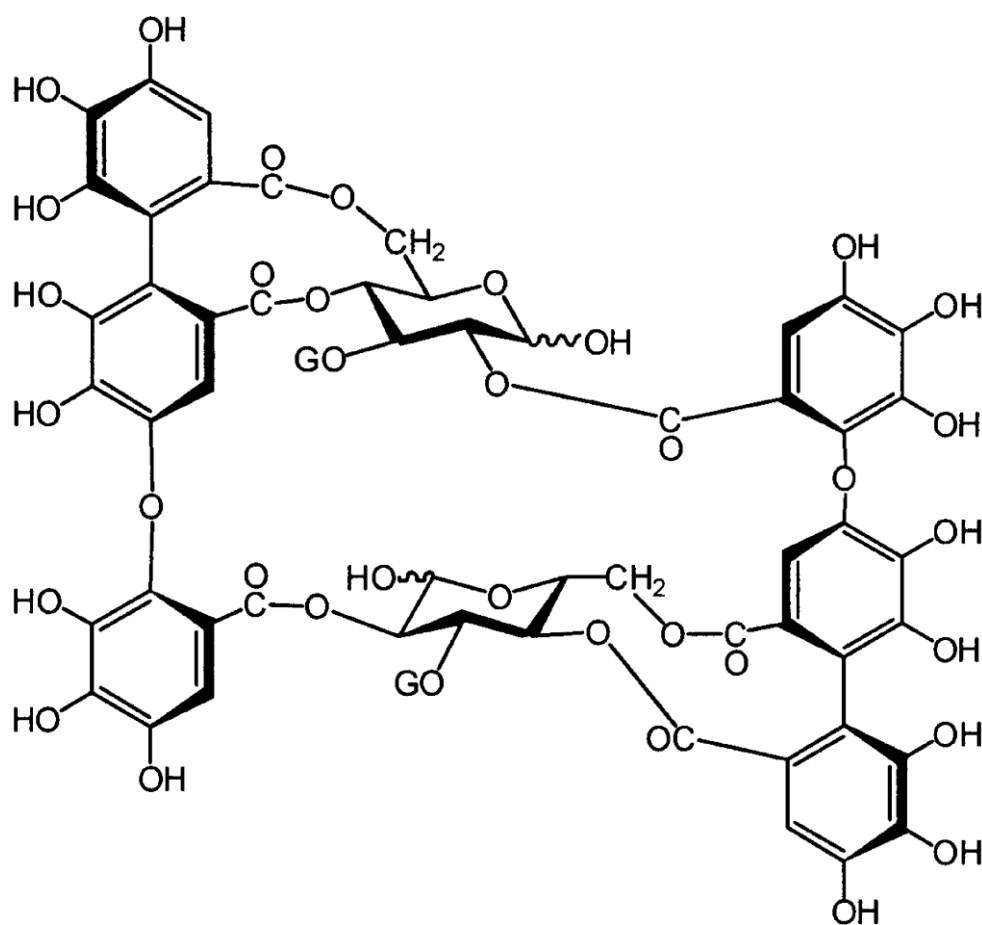
embodiment may be 0.00625 wt% or more, 0.00813 wt% or more, or 0.01 wt% or more. The concentration of the bamboo stem cell lysate may be 0.03125 wt% or less, 0.025 wt% or less, or 0.01875 wt% or less. For example, the bamboo stem cell lysate has an anti-saccharification action, promotes production of collagen, and induces keratin. Saccharification of the scalp is likely to harden the scalp. The presence of the bamboo stem cell lysate, the hair-regenerative peptide, and the apple stem cell lysate is likely to enhance the anti-saccharification action and the keratin induction action. The bamboo stem cell lysate is available from AH & NS, for example.

[0052]

The concentration of the anti-inflammatory plant extract in the hair treatment composition according to the embodiment may be 0.00563 wt% or more, 0.00732 wt% or more, or 0.00901 wt% or more. The concentration of the anti-inflammatory plant extract may be 0.02815 wt% or less, 0.02252 wt% or less, or 0.01689 wt% or less. The anti-inflammatory plant extract may have an action to protect the hair root. The presence of the hair-regenerative peptide and the anti-inflammatory plant extract is likely to enhance the anti-inflammatory action and the hair root protection action.

[0053]

Examples of the anti-inflammatory plant extract include *Chamerion angustifolium* extracts. The *Chamerion angustifolium* extracts may include a *Chamerion angustifolium* flower extract, a *Chamerion angustifolium* leaf extract, and a *Chamerion angustifolium* stem extract, and mixtures thereof. The *Chamerion angustifolium* extract maintains the amount of *Malassezia*, which is a scalp indigenous microorganism, at an appropriate level to protect the hair root. The *Chamerion angustifolium* extract contains oenothain B represented by the following formula as an active ingredient:



[0054]

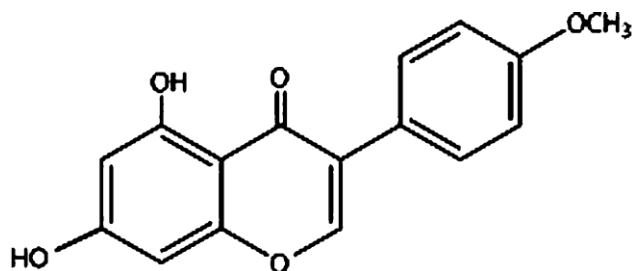
The concentration of the *Chamerion angustifolium* extract in the hair treatment composition according to the embodiment may be 0.005 wt% or more, 0.0065 wt% or more, or 0.008 wt% or more. The concentration of the *Chamerion angustifolium* extract in the hair treatment composition according to the embodiment may also be 0.025 wt% or less, 0.02 wt% or less, or 0.015 wt% or less. The *Chamerion angustifolium* extract may be contained in Defenscalp (registered trademark, AH & NS).

[0055]

The concentration of Defenscalp (registered trademark, AH & NS) in the hair treatment composition according to the embodiment may be 0.1 wt% or more, 0.125 wt% or more, or 0.15 wt% or more. The concentration of Defenscalp (registered trademark, AH & NS) may also be 0.6 wt% or less, 0.55 wt% or less, or 0.5 wt% or less.

[0056]

Examples of the anti-inflammatory plant extract include a *Trifolium pratense* flower extract and butyl fatty acid of avocado oil. It is preferred that the *Trifolium pratense* flower extract or butyl fatty acid of avocado oil be blended with the hair-regenerative peptide in the hair treatment composition according to the embodiment. *Trifolium pratense* has an effect of inhibiting interleukin 8, which may cause damage of dermal papilla cells. *Trifolium pratense* also contains biochanin A represented by the following formula:



[0057]

The concentration of the *Trifolium pratense* flower extract in the hair treatment composition according to the embodiment may be 0.00063 wt% or more, 0.00082 wt% or more, or 0.001 wt% or more. The concentration of the *Trifolium pratense* flower extract may also be 0.00315 wt% or less, 0.00232 wt% or less, 0.00189 wt% or less. The *Trifolium pratense* flower extract may be contained in Capixyl (registered trademark, AH & NS) or Miniporyl (registered trademark, AH & NS).

[0058]

The hair treatment composition according to the embodiment may be a shampoo, a beauty essence, a hair rinse, a gel, a hair treatment, a lotion, a tincture, a spray, a mousse, a detergent composition, a hair conditioner, a tonic, a pomade, and a foam. The hair treatment composition according to the embodiment is applied to the scalp one or more times per day.

[0059]

The hair treatment composition according to the embodiment may contain water, a water-soluble organic solvent such as C1-C4-alkanol, an oil, a fatty substance,

a wax, an ester of a C6-C30 monocarboxylic acid and a mono-, di-, or trihydric alcohol, saturated acyclic and cyclic hydrocarbons, a fatty acid, an aliphatic alcohol, a silicone oil, a surfactant component, an antifoaming agent, a jetting agent, an antifoaming agent, an emulsifier, a foaming agent, and a solubilizing agent, for example. The surfactant component may be anionic, cationic, amphoteric, and neutral. The emulsifier may be anionic, cationic, amphoteric, and neutral.

[0060]

The hair treatment composition according to the embodiment may contain a water-soluble or water-dispersible hair polymer, for example. Examples of the hair polymer include hair styling polymers and conditioning polymers. More specifically, examples of the hair polymer include copolymers of vinyl acetate and crotonic acid, copolymers of methyl vinyl ether and maleic anhydride, copolymers of acrylic acid or methacrylic acid and other monomers, polyurethane, N-vinylpyrrolidone, and silicone polymers.

[0061]

The hair treatment composition according to the embodiment may contain a water-insoluble silicone such as polydimethylsiloxane, for example. The hair treatment composition according to the embodiment may contain a wax such as fatty acid amide, for example.

[0062]

The hair treatment composition according to the embodiment may contain an antioxidant, for example. The *Chamerion angustifolium* extract and the *Trifolium pratense* flower extract can also function as an antioxidant. Other examples of the antioxidant include hematin, vitamin C, and vitamin E.

[0063]

The hair treatment composition according to the embodiment may contain a preservative, an oxidization preventer, a perfume oil, a lipid refatter, active components, and care components. For example, the hair treatment composition according to the embodiment may contain panthenol, collagen, vitamins, protein hydrolysates, α - and β -hydroxylcarbonic acids, a stabilizer, a pH adjuster, an opacifier, a colorant, a dye, a gel forming agent, salts, a moisturizer, a complex forming agent, a viscosity adjuster, and a light shielding agent.

[0064]

For example, the hair treatment composition according to the embodiment may contain polyalkylsiloxane, polyarylsiloxane, polyarylalkylsiloxane, a silicone resin, polyether siloxane, dimethicone copolyol (CTFA), and an amino-functionalized silicone compound.

[0065]

In the case where the hair treatment composition according to the embodiment contains a jetting agent, the

hair treatment composition according to the embodiment may contain a mixture of propane/butane, pentane, dimethyl ether, 1,1-difluoroethane (HFC-152a), carbon dioxide, nitrogen, and compressed air, for example.

[0066]

In the case where the hair treatment composition according to the embodiment contains a nonionic emulsifier, the hair treatment composition according to the embodiment may contain a laureth such as laureth-4, a ceteth such as ceteth-1, polyethylene glycol cetyl ether, a ceteareth such as ceteareth-25, a polyglycol fatty acid glyceride, hydroxylated lecithin, a lactic ester of a fatty acid, and an alkyl polyglycoside, for example.

[0067]

In the case where the hair treatment composition according to the embodiment contains a nonionic surfactant, the hair treatment composition according to the embodiment may contain a reaction product of an aliphatic alcohol or alkyl phenol having a linear or branched alkyl chain having 6 to 20 carbon atoms with ethylene oxide and/or propylene oxide.

[0068]

The hair treatment composition according to the embodiment may contain alkylamine oxide, mono- or dialkylalkanolamide, a fatty acid ester of polyethylene glycol, alkyl polyglycoside, and a sorbitan ester, for example.

[0069]

In the case where the hair treatment composition according to the embodiment contains a cationic emulsifier and/or a cationic surfactant, the hair treatment composition according to the embodiment may contain a quaternized ammonium compound, for example. The hair treatment composition according to the embodiment may contain cetyltrimethylammonium chloride or bromide, stearylbenzyltrimethylammonium chloride, distearyltrimethylammonium chloride, stearamidopropyltrimethylamine, hydroxyethylcetyltrimonium phosphate, poly(oxy-1,2-ethanediyl), and ((octadecylnitrilo)tri-2,1-ethanediyl) tris-(hydroxy)-phosphate, for example. The hair treatment composition according to the embodiment may contain a cationic guar derivative such as guar hydroxypropyltrimonium chloride, for example.

[0070]

In the case where the hair treatment composition according to the embodiment contains an anionic emulsifier and/or an anionic surfactant, the hair treatment composition according to the embodiment may contain alkyl sulfate, alkylether sulfate, alkyl sulfonate, alkylaryl sulfonate, alkyl succinate, alkylsulfo succinate, N-alkyl sarcosinate, acyl taurate, acyl isethionate, alkyl phosphate, alkylether phosphate,

alkylether carboxylate, and α -olefin sulfonate, for example.

[0071]

In the case where the hair treatment composition according to the embodiment contains an anionic surfactant, the hair treatment composition according to the embodiment may contain sodium lauryl sulfate, ammonium lauryl sulfate, sodium lauryl ether sulfate, ammonium lauryl ether sulfate, sodium lauroyl sarcosinate, sodium oleyl succinate, ammonium lauryl sulfosuccinate, sodium dodecylbenzenesulfonate, and triethanolamine dodecyl benzene sulfonate, for example.

[0072]

In the case where the hair treatment composition according to the embodiment contains an amphoteric surfactant, the hair treatment composition according to the embodiment may contain alkylbetaine, alkylamidepropylbetaine, alkylsulfobetaine, alkylglycinate, alkylcarboxyglycinate, alkylamphoacetate or propionate, and alkylamphodiacetate or dipropionate, for example.

[0073]

The hair treatment composition according to the embodiment can increase hair melanin pigments and can prevent white hair or gray hair. The hair treatment composition according to the embodiment can restore the original color of the hair before white hair or gray hair.

[0074]

Not bound to any theory, application of the hair treatment composition according to the embodiment to the scalp causes the melanin synthesis-promoting peptide to promote synthesis of the melanin pigments in the hair follicle. Even if synthesis of the melanin pigments is promoted, white or gray hair cannot be effectively restored to those containing the melanin pigments without growth of strong thick hair. The hair-regenerative peptide and the stem cell lysate promotes an increase in strength and thickness of the hair containing the melanin pigments and growth thereof. Furthermore, the anti-aging peptide enhances the resistance of the hair follicle cells and the dermal papilla cells against the stress hormones, and the anti-inflammatory plant extract suppresses inflammation in the hair follicles. Thereby, white or gray hair can be effectively restored to those containing the melanin pigments.

[0075]

Although the present invention has been described according to the embodiment as above, the description and the drawings which constitute part of this disclosure should not be construed as limitations to the present invention. From this disclosure, a variety of alternative embodiments, examples, and techniques for implementation should be apparent to persons skilled in the art. It should be understood that the present

invention encompasses a variety of embodiments not described here.

[0076]

(Examples)

[0077]

An essence (beauty essence) containing 0.001 wt% of palmitoyl tetrapeptide-20, 0.00138 wt% of acetyl tetrapeptide-3, 0.00125 wt% of a *Trifolium pratense* flower extract, 0.00002 wt% of trifluoroacetyl tripeptide-2, 0.018 wt% of an apple fruit cultured stem cell extract, 0.0125 wt% of a growth point stem cell lysate of *Phyllostachys edulis*, and 0.01 wt% of a *Chamerion angustifolium* flower/leaf/stem extract according to Example was prepared.

[0078]

Palmitoyl tetrapeptide-20 was contained in Greyverse (registered trademark). The content of Greyverse (registered trademark) in the essence according to Example was 2.0 wt%. The acetyl tetrapeptide-3 and the *Trifolium pratense* flower extract were contained in Capixyl (registered trademark). The content of Capixyl (registered trademark) in the essence according to Example was 5.0 wt%. The trifluoroacetyl tripeptide-2 was contained in Progerine (registered trademark). The content of Progerine (registered trademark) in the essence according to Example was 0.1 wt%. The apple fruit cultured stem cell extract and the growth point

stem cell lysate of *Phyllostachys edulis* were purchased from AH & NS. The *Chamerion angustifolium* flower/leaf/stem extract was contained in Defenscalp (registered trademark). The content of Defenscalp (registered trademark) in the essence according to Example was 0.2 wt%.

[0079]

20 adults of an age of 20 to 69 years old (average age: 43 years old) were selected as subjects. Before the subjects started using the essence according to Example, a doctor and a hair adviser observed white hair in the head top region and head lateral region of each subject. Using a microscope, the doctor and the hair adviser observed the color of the proximal ends of hair of each subject in the head lateral region (in the hairline of the helix topmost region).

[0080]

Subsequently, the subjects shampooed using a shampoo containing an antioxidant one time daily for 3 months, and applied the essence according to Example to the entire scalp. During this test period, the subjects were inhibited from using other shampoos, hair cosmetics, hair dyes, and hair coloring agents. The doctor and the hair adviser observed the hair of the subjects at times when one month, two months, and three months had passed from the start of use of the essence according to Example. To be noted, one subject was out of the test after two

months from the start of use of the essence according to Example for a personal reason.

[0081]

Figures 1 and 2 show the transition of the proportion of the degree of amelioration in the amount of white hair of the subjects observed by the doctor and the hair adviser. A reduction in amount of white hair was evaluated as an amelioration. Compared with the amount of white hair in the head top region before use, the amount of white hair after one month from the start of use was "unchanged" in 8 of the 20 subjects (40%), "slightly ameliorated" in 5 of the 20 subjects (25%), and "ameliorated" in 7 of the 20 subjects (35%). Compared with the amount of white hair in the head top region before use, the amount of white hair after two months from the start of use was "unchanged" in 5 of the 20 subjects (25%), "slightly ameliorated" in 10 of the 20 subjects (50%), and "ameliorated" in 5 of the 20 subjects (25%). Compared with the amount of white hair in the head top region before use, the amount of white hair after three months from the start of use was "slightly ameliorated" in 8 of the 19 subjects (42%), and "ameliorated" in 11 of the 19 subjects (58%).

[0082]

Compared with the amount of white hair in the head lateral region before use, the amount of white hair after one month from the start of use was "unchanged" in 8 of

the 20 subjects (40%), "slightly ameliorated" in 5 of the 20 subjects (25%), and "ameliorated" in 7 of the 20 subjects (35%). Compared with the amount of white hair in the head lateral region before use, the amount of white hair after two months from the start of use was "unchanged" in 1 of the 20 subjects (5%), "slightly ameliorated" in 16 of the 20 subjects (80%), and "ameliorated" in 3 of the 20 subjects (15%). Compared with the amount of white hair in the head lateral region before use, the amount of white hair after three months from the start of use was "slightly ameliorated" in 10 of the 19 subjects (53%), and "ameliorated" in 9 of the 19 subjects (47%).

[0083]

Figures 3 and 4 show the transition of the proportion of the degree of amelioration in the color of white hair of the subjects observed by the doctor and the hair adviser. A white hair which got colored was evaluated as an amelioration. Compared with the color of the white hair in the head top region before use, the color of the white hair after one month from the start of use was "unchanged" in 8 of the 20 subjects (40%), "slightly ameliorated" in 7 of the 20 subjects (35%), and "ameliorated" in 5 of the 20 subjects (25%). Compared with the color of the white hair in the head top region before use, the color of the white hair after two months from the start of use was "unchanged" in 2 of the 20

subjects (10%), "slightly ameliorated" in 15 of the 20 subjects (75%), and "ameliorated" in 3 of the 20 subjects (15%). Compared with the color of the white hair in the head top region before use, the color of the white hair after three months from the start of use was "slightly ameliorated" in 10 of the 19 subjects (53%) and "ameliorated" 9 of the 19 subjects (47%).

[0084]

Compared with the color of the white hair in the head lateral region before use, the color of the white hair after one month from the start of use was "unchanged" in 8 of the 20 subjects (40%), "slightly ameliorated" in 9 of the 20 subjects (45%), and "ameliorated" in 3 of the 20 subjects (15%). Compared with the color of the white hair in the head lateral region before use, the color of the white hair after two months from the start of use was "unchanged" in 1 of the 20 subjects (5%), "slightly ameliorated" in 17 of the 20 subjects (85%), and "ameliorated" in 2 of the 20 subjects (10%). Compared with the color of the white hair in the head lateral region before use, the color of the white hair after three months from the start of use was "slightly ameliorated" in 13 of the 19 subjects (68%), and "ameliorated" in 6 of the 19 subjects (32%).

[0085]

Figures 5 and 6 show the transition of the proportion of the degree of amelioration in the proximal

ends of white hair of the subjects observed by the doctor and the hair adviser. Proximal ends of white hair which got grey was evaluated as an amelioration. Compared with the state of proximal ends of white hair in the head top region before use, the state thereof after one month from the start of use was "unchanged" in 8 of the 20 subjects (40%), "slightly ameliorated" in 5 of the 20 subjects (25%), and "ameliorated" in 7 of the 20 subjects (35%). Compared with the state of proximal ends of white hair in the head top region before use, the state thereof after two months from the start of use was "unchanged" in 3 of the 20 subjects (15%), "slightly ameliorated" in 14 of the 20 subjects (70%), and "ameliorated" in 3 of the 20 subjects (15%). Compared with the state of proximal ends of white hair in the head top region before use, the state thereof after three months from the start of use was "slightly ameliorated" in 10 of the 19 subjects (53%), and "ameliorated" in 9 of the 19 subjects (47%).

[0086]

Compared with the state of proximal ends of white hair in the head lateral region before use, the state thereof after one month from the start of use was "unchanged" in 9 of the 20 subjects (45%), "slightly ameliorated" in 5 of the 20 subjects (25%), and "ameliorated" in 6 of the 20 subjects (30%). Compared with the state of proximal ends of white hair in the head lateral region before use, the state thereof after two

months from the start of use was "unchanged" in 1 of the 20 subjects (5%), "slightly ameliorated" in 11 of the 20 subjects (55%), and "ameliorated" in 8 of the 20 subjects (40%). Compared with the state of proximal ends of white hair in the head lateral region before use, the state thereof after three months from the start of use was "slightly ameliorated" in 8 of the 19 subjects (42%), and "ameliorated" in 11 of the 19 subjects (58%).

[0087]

The degree of bother about white hair was evaluated by the subjects who answered a questionnaire using a visual analogue scale (VAS). In the VAS, the evaluation value was defined as 0 when the white hair was bothering, and was defined as 10 when the white hair was not bothering. The results shown in Figure 7 show that the white hair had been becoming less bothering from the start of use of the essence according to Example. A VAS change rate (%) of more than 105% indicates an amelioration, and a VAS change rate (%) of less than 95% indicates worsening. Figure 8 also shows that the degree of bother about white hair had been ameliorating from the start of use of the essence according to Example.

[0088]

The amount of white hair was evaluated by the subjects who answered a questionnaire using a VAS. In the VAS, the evaluation value was defined as 0 when the amount of white hair increased, and was defined as 10

when the amount of white hair decreased. The results shown in Figure 9 show that the amount of white hair has been decreasing from the start of use of the essence according to Example. Figure 10 also shows that the amount of white hair had been ameliorating from the start of use of the essence according to Example.

[0089]

The color of white hair was evaluated by the subjects who answered a questionnaire using a VAS. In the VAS, the evaluation value was defined as 0 when the color of white hair became lighter, and was defined as 10 when the color of white hair became darker. The results shown in Figure 11 show that the color of white hair had been becoming darker from the start of use of the essence according to Example. Figure 12 also shows that the color of white hair had been ameliorating from the start of use of the essence according to Example.

[0090]

The region of white hair was evaluated by the subjects who answered a questionnaire using a VAS. In the VAS, the evaluation value was defined as 0 when the region of white hair increased, and was defined as 10 when the region of white hair decreased. The results shown in Figure 13 show that the region of white hair had been decreasing from the start of use of the essence according to Example. Figure 14 also show that the

region of white hair had been ameliorating from the start of use of the essence according to Example.

[0091]

The degree of visibility of white hair was evaluated by the subjects who answered a questionnaire using a VAS. In the VAS, the evaluation value was defined as 0 when the white hair became more visible, and was defined as 10 when the white hair had been becoming less visible. The results shown in Figure 15 show that the white hair became less visible from the start of use of the essence according to Example. Figure 16 also shows that the degree of visibility of white hair had been ameliorating from the start of use of the essence according to Example.

[0092]

The doctor checked itchiness in the scalp and abnormalities of the scalp at the test sites of the subjects. As shown in Figure 17, any such states of the scalp were not observed.

[0093]

(Comparative Example)

An essence (beauty essence) according to Comparative Example containing 0.001 wt% of palmitoyl tetrapeptide-20 was prepared, the essence according to Comparative Example being the same as the essence according to Example except that the composition did not contain acetyl tetrapeptide-3, the *Trifolium pratense* flower extract, trifluoroacetyl tripeptide-2, the apple fruit

cultured stem cell extract, the growth point stem cell lysate of *Phyllostachys edulis*, and the *Chamerion angustifolium* flower/leaf/stem extract.

[0094]

20 adults of an age of 20 to 69 years old (average age: 44 years old) were selected as subjects. Before the subjects started using the essence according to Comparative Example, the doctor and the hair adviser observed the white hair in the head top region and head lateral region of each subject. Using a microscope, the doctor and the hair adviser observed the color of the proximal ends of hair of each subject in the head lateral region (in the hairline of the helix topmost region).

[0095]

Subsequently, the subjects (one subject was out of the test for a personal reason) shampooed using a shampoo containing an antioxidant one time daily for 3 months, and applied the essence according to Comparative Example to the entire scalp. During this test period, the subjects were inhibited from using other shampoos, hair cosmetics, hair dyes, and hair coloring agents. The doctor and the hair adviser observed the hair of the subjects at times when one month, two months, and three months had passed from the start of use of the essence according to Comparative Example.

[0096]

Figures 18 and 19 show the transition of the proportion of the degree of amelioration in the amount of white hair of the subjects observed by the doctor and the hair adviser. The criteria for observation were the same as those in Example. Compared with the amount of white hair in the head top region before use, the amount of white hair after one month from the start of use was "unchanged" in 6 of the 19 subjects (31%), "slightly ameliorated" in 10 of the 19 subjects (53%), and "ameliorated" in 3 of the 19 subjects (16%). Compared with the amount of white hair in the head top region before use, the amount of white hair after two months from the start of use was "unchanged" in 6 of the 19 subjects (32%), "slightly ameliorated" in 12 of the 19 subjects (63%), and "ameliorated" in 1 of the 19 subjects (5%). Compared with the amount of white hair in the head top region before use, the amount of white hair after three months from the start of use was "slightly ameliorated" in 13 of the 19 subjects (68%), and "ameliorated" in 6 of the 19 subjects (32%).

[0097]

Accordingly, the degree of amelioration in the amount of white hair in the head top region when the essence according to Comparative Example was used was lower than that when the essence according to Example was used.

[0098]

Compared with the amount of white hair in the head lateral region before use, the amount of white hair after one month from the start of use was "unchanged" in 7 of the 19 subjects (37%), "slightly ameliorated" in 11 of the 19 subjects (58%), and "ameliorated" in 1 of the 19 subjects (5%). Compared with the amount of white hair in the head lateral region before use, the amount of white hair after two months from the start of use was "unchanged" in 3 of the 19 subjects (16%), "slightly ameliorated" in 15 of the 19 subjects (79%), and "ameliorated" in 1 of the 19 subjects (5%). Compared with the amount of white hair in the head lateral region before use, the amount of white hair after three months from the start of use was "slightly ameliorated" in 16 of the 19 subjects (84%), and "ameliorated" in 3 of the 19 subjects (16%).

[0099]

Accordingly, the degree of amelioration in the amount of white hair in the head lateral region when the essence according to Comparative Example was used was lower than that when the essence according to Example was used.

[0100]

Figures 20 and 21 show the transition of the proportion of the degree of amelioration in the color of white hair of the subjects observed by the doctor and the hair adviser. The criteria for observation were the same

as those in Example. Compared with the color of white hair in the head top region before use, the color of white hair after one month from the start of use was "unchanged" in 8 of the 19 subjects (42%), "slightly ameliorated" in 9 of the 19 subjects (47%), and "ameliorated" in 2 of the 19 subjects (11%). Compared with the color of white hair in the head top region before use, the color of white hair after two months from the start of use was "unchanged" in 5 of the 19 subjects (26%), "slightly ameliorated" in 12 of the 19 subjects (63%), and "ameliorated" in 2 of the 19 subjects (11%). Compared with the color of white hair in the head top region before use, the color of white hair after three months from the start of use was "slightly ameliorated" in 12 of the 19 subjects (63%), and "ameliorated" in 7 of the 19 subjects (37%).

[0101]

Accordingly, the degree of amelioration in the color of white hair in the head top region when the essence according to Comparative Example was used was lower than that when the essence according to Example was used.

[0102]

Compared with the color of white hair in the head lateral region before use, the color of white hair after one month from the start of use was "unchanged" in 8 of the 19 subjects (42%), and "slightly ameliorated" in 11 of the 19 subjects (58%). Compared with the color of

white hair in the head lateral region before use, the color of white hair after two months from the start of use was "unchanged" in 4 of the 19 subjects (21%), and "slightly ameliorated" in 15 of the 19 subjects (79%). Compared with the color of white hair in the head lateral region before use, the color of white hair after three months from the start of use was "unchanged" in 1 of the 19 subjects (5%), "slightly ameliorated" in 14 of the 19 subjects (74%), and "ameliorated" in 4 of the 19 subjects (21%).

[0103]

Accordingly, the degree of amelioration in the color of white hair in the head lateral region when the essence according to Comparative Example was used was lower than that when the essence according to Example was used.

[0104]

Figures 22 and 23 show the transition of the proportion of the degree of amelioration in proximal ends of white hair of the subjects observed by the doctor and the hair adviser. The criteria for observation were the same as those in Example. Compared with the state of proximal ends of white hair in the head top region before use, the state thereof after one month from the start of use was "unchanged" in 8 of the 19 subjects (42%), and "slightly ameliorated" in 11 of the 19 subjects (58%). Compared with the state of proximal ends of white hair in the head top region before use, the state thereof after

two months from the start of use was "unchanged" in 8 of the 19 subjects (42%), and "slightly ameliorated" in 11 of the 19 subjects (58%). Compared with the state of proximal ends of white hair in the head top region before use, the state thereof after three months from the start of use was "unchanged" in 1 of the 19 subjects (5%), "slightly ameliorated" in 13 of the 19 subjects (69%), and "ameliorated" in 5 of the 19 subjects (26%).

[0105]

Accordingly, the degree of amelioration in the proximal ends of white hair in the head top region when the essence according to Comparative Example was used was lower than that when the essence according to Example was used.

[0106]

Compared to the state of the proximal ends of white hair in the head lateral region before use, the state thereof after one month from the start of use was "unchanged" in 8 of the 19 subjects (42%), "slightly ameliorated" in 9 of the 19 subjects (47%), and "ameliorated" in 2 of the 19 subjects (11%). Compared to the state of the proximal ends of white hair in the head lateral region before use, the state thereof after two months from the start of use was "unchanged" in 3 of the 19 subjects (16%), "slightly ameliorated" in 10 of the 19 subjects (53%), and "ameliorated" in 6 of the 19 subjects (31%). Compared to the state of the proximal ends of

white hair in the head lateral region before use, the state thereof after three months from the start of use was "slightly ameliorated" in 10 of the 19 subjects (53%), and "ameliorated" in 9 of the 19 subjects (47%).

[0107]

Accordingly, the degree of amelioration in the state of the proximal ends of white hair in the head lateral region when the essence according to Comparative Example was used was lower than that when the essence according to Example was used.

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Claims

[Claim 1]

A hair treatment composition comprising:

0.0005 wt% or more of palmitoyl tetrapeptide-20 or palmitoyl tetrapeptide-20 amide;

0.00069 wt% or more of acetyl tetrapeptide-3;

0.00001 wt% or more of trifluoroacetyl tripeptide-2;

0.01525 wt% or more of a stem cell lysate; and

0.00563 wt% or more of an anti-inflammatory plant extract, and wherein the stem cell lysate contains an apple stem cell lysate, and wherein the anti-inflammatory plant extract contains a *Trifolium pratense* flower extract and a *Chamerion angustifolium* extract.

[Claim 2]

The composition according to claim 1, wherein 0.009 wt% or more of the apple stem cell lysate is contained.

[Claim 3]

The composition according to claim 1, wherein 0.00063 wt% or more of the *Trifolium pratense* flower extract is contained.

[Claim 4]

The composition according to any one of claims 1 to 3, wherein the *Trifolium pratense* flower extract is contained in Capixyl (registered trademark).

[Claim 5]

The composition according to any one of claims 1 to 4, wherein the palmitoyl tetrapeptide-20 amide is contained in Greyverse (registered trademark).

[Claim 6]

The composition according to any one of claims 1 to 5, wherein the acetyl tetrapeptide-3 is contained in Capixyl (registered trademark).

[Claim 7]

The composition according to any one of claims 1 to 6, wherein the trifluoroacetyl tripeptide-2 is contained in Progerine (registered trademark).

[Claim 8]

The composition according to any one of claims 1 to 7, wherein the composition prevents white hair or gray hair.

[Claim 9]

The composition according to any one of claims 1 to 8, wherein the composition increases hair melanin pigments.

[Claim 10]

The composition according to any one of claims 1 to 9, wherein the composition is a shampoo.

[Claim 11]

The composition according to any one of claims 1 to 10, wherein the composition is a beauty essence.